

REMARKS

Applicant has reviewed and considered the final office action mailed on December 7, 2001 and the references cited therewith.

Claims 1, 4, 8, 12, 15, 19, 23, 27, 30, 34, 38, 42, 45, 50, 56 and 67 are amended, no claims are canceled, and no claims are added; as a result, claims 1-77 are now pending in the application.

Information Disclosure Statement

Applicant respectfully requests that a copy of the 1449 Forms, listing all references that were submitted with the Information Disclosure Statements filed on November 9, 2000 and November 20, 2001, marked as being considered and initialed by the Examiner, be returned with the next official communication.

§103 Claim Rejections

Claims 1-5, 7-12, 14-15, 17-20, 22-23, 25, 26, 27, 29-30, 32-34, 36-38, 40-42, 44-45, 47-50, 52-56, 58-59, 60, 62-65, and 72 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. in view of Ting et al. and Brown et al. (U.S.6,168,704).

Applicant does not admit that Dubin et al. is prior art, that Ting et al. is prior art or that Brown et al. is prior art and reserves the right to swear behind Dubin et al., Ting et al. and Brown et al. as provided for under 37 C.F.R. 1.131.

Applicant respectfully submits that the cited references do not provide a teaching, suggestion or motivation to combine the references. In fact, Dubin et al. teaches away from claim 1, as amended, which is a factor considered in deciding whether references provide a teaching, suggestion or motivation to combine.

Claim 1, as amended, recites "... depositing a conductor on the seed area by a selective deposition process *after* removing the barrier layer and seed layer from selected areas of the insulator" (emphasis added)

In contrast, Dubin et al., which the office action relies on to establish the "... depositing a conductor" operation of claim 1, teaches, as shown in Figure 3 and Figure 4, depositing a plated copper layer 36 *before* removing the barrier layer and seed layer from selected areas of the insulator.

Hence, by teaching deposition of a plated copper layer 36 before removing the barrier layer, which is effectively the opposite of the recitation from claim 1 quoted above, Dubin et al. teaches away from claim 1. Teaching away is a factor that cuts against finding a teaching, suggestion or motivation to combine references.

Thus, since the references do not provide a teaching, suggestion or motivation to combine and Dubin et al. teaches away from claim 1, the office action fails to state a *prima facie* case of obviousness with respect to claim 1.

Furthermore, even if combined, the cited references fail to teach or suggest all of the elements of claim 1.

Specifically, Dubin et al. fails to teach or suggest "... depositing a conductor on the seed area by a selective deposition process *after* removing the barrier layer and seed layer from selected areas of the insulator" Dubin et al. teaches, as shown in Figure 3 and Figure 4, depositing a plated copper layer 36 *before* removing the barrier layer and seed layer from selected areas of the insulator. Thus, since the references fail to teach or suggest each of the elements of claim 1, the office action fails to state a *prima facie* case of obviousness with respect to claim 1.

Therefore, applicant requests withdrawal of the rejection and reconsideration and allowance of claim 1.

Claims 4, 8, 12, 15, 19, 23, 27, 30, 34, 38, 42, 45, 50 and 56, as amended, recite elements similar to the elements recited in claim 1. For reasons analogous to those provided above with respect to claim 1 and elements in the claims, applicant respectfully submits that the office action fails to state a *prima facie* case of obviousness with respect to claims 4, 8, 12, 15, 19, 23, 27, 30, 34, 38, 42, 45, 50 and 56.

Therefore, applicant requests withdrawal of the rejections and reconsideration and allowance of claims 4, 8, 12, 15, 19, 23, 27, 30, 34, 38, 42, 45, 50 and 56.

Claims 2-3 are dependent on claim 1, claims 5 and 7 are dependent on claim 4, claims 9-11 are dependent on claim 8, claim 14 is dependent on claim 12, claims 17-18 are dependent on claim 15, claims 20 and 22 are dependent on claim 19, claims 25 and 26 are dependent on claim 23, claim 29 is dependent on claim 27, claims 32-33 are dependent on claim 30, claims 36-37 are dependent on claim 34, claims 40-41 are dependent on claim 38, claim 44 is dependent on claim 42, claims 47-49 are dependent on claim 45, claims 52-55 are dependent on claim 50, and claims 58-60 and 62-65 are dependent on claim 56. For reasons analogous to those provided above and elements in the claims, applicant respectfully submits that the office action fails to state a *prima facie* case of obviousness with respect to the recited claims.

Therefore, applicant requests withdrawal of the rejections of claims 2-3, 5, 7, 9-11, 14, 17-18, 20, 22, 25, 26, 29, 32-33, 36-37, 40-41, 44, 47-49, 52-55, 58-60 and 62-65 and reconsideration and allowance of claims 2-3, 5, 7, 9-11, 14, 17-18, 20, 22, 25, 26, 29, 32-33, 36-37, 40-41, 44, 47-49, 52-55, 58-60 and 62-65.

Claim 67 is amended to recite "... depositing a layer of copper on the seed area after removing the barrier layer and seed layer from selected areas of the oxide layer" For the reasons provided above with respect to claim 1, applicant respectfully submits that claim 67 is allowable. Since claim 72 is dependent on claim 67, claim 72 should also be allowable.

Therefore, applicant requests withdrawal of the rejection and reconsideration and allowance of claim 72.

Claims 6 and 66 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. in view of Ting et al. and Brown et al. as applied to claims 1-5, 7-12, 14-15, 17, 19-20, 23, 25, 27, 29-30, 32, 34, 36, 38, 40, 42, 44-45, 47, 50, 52, 54, 56, 59, 60, 62, 65 and 72 above, and further in view of Farkas et al. (US 6,001,730), as previously applied.

Claims 6 and 66 are dependent on claims 1 and 56, respectively. Applicant respectfully submits that claims 1 and 56, as amended and argued above, are in condition for allowance. Thus, claims 6 and 66 should be in condition for allowance. Therefore, applicant requests withdrawal of the rejections and reconsideration and allowance of claims 6 and 66.

Claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61, and 67-77 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. in view of Ting et al. and Brown et al., and further in view of Nogami et al., as previously applied.

Applicant does not admit that Dubin et al. is prior art, that Ting et al. is prior art, that Brown et al. is prior art or that Nogami et al. is prior art and reserves the right to swear behind Dubin et al., Ting et al., Brown et al. and Nogami et al. as provided for under 37 C.F.R. 1.131.

Each of the rejected claims recites “depositing a conductor on the seed area”, “depositing gold on the seed area”, “depositing silver on the seed area”, “depositing aluminum on the seed area” or “depositing a layer of copper on the seed area..” The office action suggests that Dubin et al. teaches, at Figure 4 and column 4, lines 27-29, “depositing a conductor on the seed area.” Applicant respectfully disagrees. As can be seen by reading claim 1, the “seed area” is formed by “removing the barrier layer and seed layer from selected areas of the insulator, leaving the seed area.” Dubin et al. does not teach forming a seed area because Dubin et al. does not teach removing a barrier layer and seed layer from selected areas of the insulator. Rather, Dubin et al. teaches (see Figure 3 and Figure 4 of Dubin et al.) forming a plated copper layer 36 on the copper-aluminum alloy film 24 over the entire surface of the wafer and removing the plated copper layer 36 and the copper-aluminum alloy film 24 without forming a “seed area.” Since Dubin et al. does not teach forming a “seed area”, Dubin et al. cannot teach “depositing a conductor on the seed area”, “depositing gold on the seed area”, “depositing silver on the seed area”, “depositing aluminum on the seed area” or “depositing a layer of copper on the seed area.” Thus, Dubin et al. does not teach or suggest all of the claim elements, so the references do not support a *prima facie* obviousness rejection under 37 U.S.C. § 103(a).

Therefore, applicant requests withdrawal of the rejections and reconsideration and allowance of claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61 and 67-77.

The references offered in support of a 103(a) rejection must also be read for all that they teach. Applicant respectfully submits that Dubin et al., by not teaching the formation of a seed area prior to the deposition of a conductor, teaches away from claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61 and 67-77. Teaching away is a factor considered in deciding whether the references include a teaching, suggestion or motivation to combine. Since Dubin et al. teaches away for the above argued claims, applicant respectfully submits that the references fail to provide a teaching suggestion or motivation to combine. Thus, the office action fails to state a *prima facie* case of obviousness with respect to claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61 and 67-77.

Furthermore, claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, and 61 are dependent on amended claims 12, 15, 19, 23 17, 30, 34, 38, 42, 45, 50 and 56, respectively. Applicant respectfully submits that claims 12, 15, 19, 23 17, 30, 34, 38, 42, 45, 50 and 56, as amended, are in condition for allowance. Thus, claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, and 61 should also be in condition for allowance.

Therefore, for the reasons provided above applicant requests withdrawal of the rejections and reconsideration and allowance of the claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61 and 67-77.

AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.116 - EXPEDITED PROCEDURE

Serial Number: 09/259,849

Filing Date: March 1, 1999

Title: CONDUCTIVE STRUCTURES IN INTEGRATED CIRCUITS

Page 13

Dkt: 303.557US1

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone applicant's attorney at 612-371-2109 to facilitate prosecution of the application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

PAUL A. FARRAR

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(612) 371-2109

Date January 15, 2002 By Danny J. Padys
Danny J. Padys
Reg. No. 35,635

CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Box AF, Commissioner of Patents, Washington, D.C. 20231, on this 15th day of January, 2002.

Name Amy Moriarty

Signature Amy Moriarty